ABSTRACT

The invention pertains to a method for the making of a Nyquist digital filter with null inter-symbol interference, designed to process a physical signal transmitted between a sender and a receiver through a transmission channel,

said filter being a symmetrical N order $P(z) = F^2(z)$ filter implementing an oversampling factor M=4, and forming a matched fair comprising a sending filter and a reception filter,

the polyphase breakdown of F(z) being written as :

$$F(z) = F_0(z^4) + z^{-1}F_1(z^4) + z^{-2}F_2(z^4) + z^{-3}F_3(z^4)$$

characterized in that N is different from 4n, with n as an integer,

and in that :

- If N=4n+1, $F_1(z)\hat{F}_1(z) + z^{-1}F_2(z)\hat{F}_2(z) = \gamma z^{-n}$
- If N=4n+2, $2F_0(z)\hat{F}_0(z) + F_1^2(z) + z^{-1}F_3^2(z) = \gamma z^{-n}$
- If N=4n+3, $F_0(z)\hat{F}_0(z) + F_1(z)\hat{F}_1(z) = \gamma z^{-n}$

$\hat{F}$ being the mirror symmetry of F and γ being a non-null constant.